

Mother Fossil Find Awarded *Australasian Science* Prize

The 2008 *Australasian Science* Prize has been awarded to Prof John Long for his discovery of a fossilised embryo from a Devonian fish (AS, July 2008 pp.16-18). The discovery is the first of an embryo inside a mother from the Palaeozoic Era (540-250 million years ago), and provides insights into the breeding behaviour of an entire class of extinct species.

Like many other discoveries Long has made as Head of Sciences at Museum Victoria, the fossil came from the extraordinary Gogo site in Western Australia, which Long has been studying since the mid-1980s. Gogo is unique, Long says, both because the fish were preserved very rapidly and because the northern part of Western Australia has been subject to so little tectonic deformation.

"Most fossil fish look like kippers on a rock because they get squashed flat by the compaction of the layers above them," Long says. At Gogo the fish appear, as the title of one of his book puts it, to be "swimming in stone". Long hints that some other remarkable findings from Gogo are ready to be published.

Long says the discovery of the original "mother fish" was the "rosetta stone that opened our minds to interpreting other fossils" whose embryos were less clearly

recognisable. He says the discovery has "attracted an enormous amount of global interest", and he has given talks not just to fellow palaeontologists but to neuroscientists and other biologists fascinated by the discovery that such early fish bred using matrotrophy, the most advanced form of live birth where the umbilical cord carries nutrients to the embryo.

Long's award drew praise from several prominent researchers. Prof Pat Vickers-Rich, Chair of Palaeontology at Monash University, described Long's work as "world-class... Not only did this take very serious and clever field work, but the delicate preparation of this specimen and the recognition of what was before one's eyes was just outstanding."

Ken Campbell, Emeritus Professor of Geology at the Australian National University, said that "John Long has the wonderful ability to sort through new material and see structures that other experienced palaeontologists completely overlook," and praised "his capacity to make unusual observation, his capacity to extract information from unlikely sources and his capacity to interpret new data in terms of a good knowledge of comparative anatomy".

Campbell also drew attention to Long's "outstanding ability to get ideas across to



The discovery was the cover story of *Australasian Science's* July 2008 edition.

the public... There is no other Australian person who has done so much to inform the general public about palaeontological discoveries and their importance in obtaining a broad view of evolutionary science."

Prof Lyn Beazley, Professor of Zoology at the University of Western Australia and former Chief Scientist of Western Australia, endorsed Long's award, noting his "outstanding science and science communication work, which has increased enormously our understanding of vertebrate evolution". Beazley specifically pointed to Long's books on the Gogo fish for young readers, adding: "Without doubt John is an outstanding scientist and an outstanding citizen".

Long says the award is a "shot in the arm for palaeontology" and "shows palaeontology still as a major role to play in bioscience, despite the rise of molecular biology. These fossils give you an exact timing, which can tie the molecular clock to actual events in evolution."

Long also considers the *Australasian Science* Prize "a fantastic recognition of the way museums are doing high quality science". He adds that museums can "do more fundamental research that is not driven by national research priorities. We need to keep collecting these samples because you never know what you might find."

PAST WINNERS OF THE AUSTRALASIAN SCIENCE PRIZE

- 2007 Prof Paul Fisher (La Trobe University) for discovering that an alarm protein in slime mould could be used to model cellular damage observed in human mitochondrial diseases.
- 2006 A/Prof Alex Hamilton and the Quantum Electronic Devices Group (University of NSW) for developing quantum semiconductor devices that use holes instead of electrons.
- 2005 Alexander Argyros, Dr Martijn van Eijkelenborg and Dr Maryanne Large (University of Sydney) for developing polymer optical fibres that perform competitively with silica fibres.
- 2004 Prof Levon Khachigian (University of NSW) for developing DNA drugs with potential in cancer treatment.
- 2003 Prof Mark Rowe (University of NSW) for determining how sensations are processed and transmitted in the brains of mammals.
- 2002 Dr Mark Hindell (University of Tasmania) for research on the behaviour of southern elephant seals and other marine predators.
- 2001 Prof Mandyam Srinivasan, Dr Shaowu Zhang & Dr Javaan Chahl (Australian National University) for extending knowledge of the behaviour and intelligence of bees to artificial intelligence.
- 2000 Dr Charlie Veron & Dr Mary Stafford-Smith (Australian Institute of Marine Science) for the discovery of 169 species of corals and documenting all known species in *Corals of the World*.